

Striction-based Power Monitoring in Space Environment, Phase I

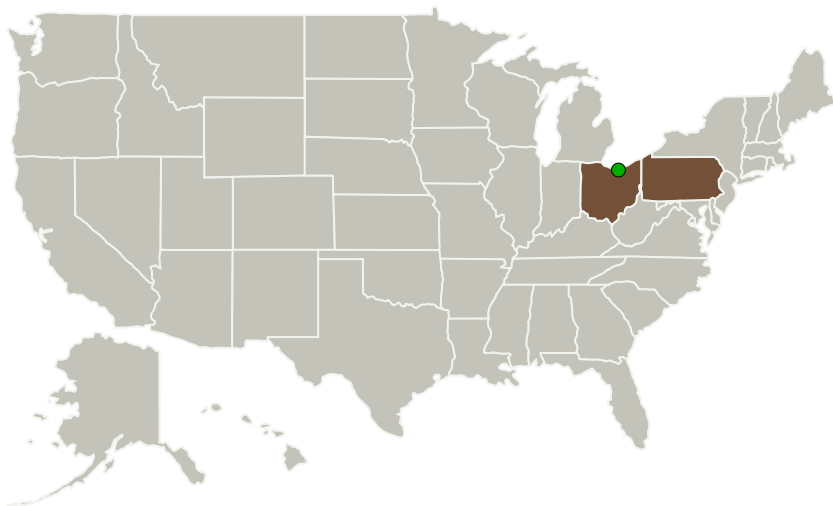
Completed Technology Project (2013 - 2013)



Project Introduction

The program will leverage recent advances in striction materials and coupled striction devices as to enable highly isolated (analog) voltage and current flow sensors very suitable for harsh space environment power monitoring. Exhibiting negligible electromagnetic disturbance coupling and electromagnetic emission, these non-photonic striction based power flow monitoring introduces decided advantages of eliminating magnetics, processors, degradation and 'latch-up'. These units are simpler and lower cost to manufacture than photonic or capacitive coupled methods of measurement and possessing and furthermore provide far greater (galvanic) isolation capability than is presently achievable. Moreover they can safely/reliably operate over a wide temperature range to as low as cryogenic. The innovation eliminates the present need for separate isolation and gain stages as these are now accomplished in a single step as to reduce design complexity and risk. The effort is to show that these new striction power flow monitoring capabilities can measure power characteristics over wide bandwidth to DC and are highly suitable for widespread NASA use in wide temperature range and high radiation environments. The proposed modular design will be easy to install and reduces the spares requirements.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
QorTek Inc	Lead Organization	Industry Small Disadvantaged Business (SDB)	Williamsport, Pennsylvania
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations

Ohio	Pennsylvania
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Project Transitions

▶ **May 2013:** Project Start

✓ **November 2013:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/139373>)

Images



Project Image

Striction-based Power Monitoring in Space Environment

(<https://techport.nasa.gov/image/129410>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

QorTek Inc

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Gareth J Knowles

Co-Investigator:

Gareth Knowles

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Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.3 Power Management and Distribution
 - └ TX03.3.1 Management and Control

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System